REVIEW PLAN

MINNEHAHA CREEK WATERSHED
FEASIBILITY STUDY

September 26, 2007

1. General. This review plan was developed in accordance with EC 1105-2-408, "Peer Review of Decision Documents," dated 31 May 2005. The EC establishes procedures to ensure the quality and credibility of Corps decision documents. It applies to all feasibility studies and reports and any other reports that lead to decision documents that require authorization by Congress.

2. Project Description.

a. The Minnehaha Creek Watershed Feasibility Study began in January 2003 with the execution of a Feasibility Cost Sharing Agreement between the St. Paul District US Army Corps of Engineers and the Minnehaha Creek Watershed District (MCWD). The MCWD will provide 50% of all study costs through non-federal cash and in-kind contributions. The Corps of Engineers funds the remaining 50% of study costs. The study is currently estimated to cost $4,420,000.00. The study was recommended in the Reconnaissance Study, Upper Mississippi River, Lake Itasca to Lock and Dam 2, Multiple Purpose Watershed Management, Federal Interest Assessment and is authorized by Resolution of the U.S. House of Representatives Committee on Transportation and Infrastructure, Docket 2597, dated April 15, 1999.

> "Resolved by the Committee on Transportation and Infrastructure of the United States House of Representatives, that the Secretary of the Army is requested to review the report of the Chief of Engineers on the Mississippi River above Coon Rapids Dam near Minneapolis, Minnesota, published as House Document 66, 73rd Congress, 1st Session, and other pertinent reports with a view to determining whether modifications of the recommendations contained therein are advisable at this time in the interest of flood damage reduction, environmental restoration and protection, water quality, and other purposes, with a special emphasis on determining the advisability of developing a comprehensive coordinated watershed management plan for the development, conservation, and utilization of water and related land resources in the Upper Mississippi River Basin from the Mississippi's headwaters to Lock and Dam #2 at Hastings, Minnesota."

b. The Minnehaha Creek study will evaluate a variety of measures to restore the ecosystem in the Minnehaha Creek Watershed, a urban watershed which is under extreme developmental pressures. Federal (Corps of Engineers) interest in the Minnehaha Creek Watershed is based on the potential benefits of aquatic ecosystem restoration and the fact that a number of ditched wetlands are in areas that have high restoration potential.

c. The planning objectives are to: 1. Determine the flow regime in Minnehaha Creek that meets both human and ecosystem needs through a highly involved stakeholder process. 2. Preserve and enhance connective ecosystems (greenway corridors) on creeks leading to Lake Minnetonka and along Minnehaha Creek. 3. Improve the chemical and physical quality of surface water both in creeks and lakes. Investigate options for improving the water quality in Painters Creek/Jennings Bay and 6-Mile Creek/Halsted Bay. 4. Minimize obstructions to recreational boating and fish passage along Minnehaha Creek. 5. Integrate public recreation features into multipurpose project formulation, whenever possible.
Preserve, protect, and restore the natural appearance and function of riparian/shoreline ecosystems throughout the watershed. 6. Reduce the severity and frequency of flooding along Minnehaha Creek.

d. The study will evaluate a wide range of measures, from changing dam operations to restoring the historic seedbed in wetlands. The major features include changing the dam operations at Grays Bay Dam, remove man-made barriers to fish passage and recreation along Minnehaha Creek, preserve and protect the historic WPA wall downstream of Minnehaha Falls, restore wetland and stream corridors focusing on the areas with less development, and working closely with the watershed district on their Comprehensive Watershed Management Plan and regulatory functions.

3. Product Delivery Team (PDT). The St. Paul District, Corps of Engineers and the Minnehaha Creek Watershed District are jointly conducting this study. Contact the project manager by telephone at (651) 290-5489 for a list of team members. The team is multidisciplinary and consists of members from nearly all Corps disciplines. Coordination between the PDT and the Planning Center of Expertise will be coordinated with the PCX POC 309-794-5487.

4. Methodology and Model Certification.

a. EC 1105-2-407 provides the following definition of a planning model:

> **"any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision-making."**

b. Habitat outputs will be assessed and derived primarily using the Habitat Evaluation Procedures (HEP) developed by the U.S. Fish and Wildlife Service and other agencies. An area can have various habitats and the habitats can have different suitabilities for species that may occur in that area. The suitabilities can be quantified (via Habitat Suitability Indices, or HSIs). The overall suitability of an area for a species can be represented as a product of the areal extent of each habitat and the suitability of the habitats for the species.

c. As habitat changes through time, either by natural or human-induced processes, we can quantify the overall suitability through time by integrating the areal extent-suitability product function over time. Thus, we can quantitatively compare the forecasted future without-project condition to future conditions with alternative plans

d. The Habitat Evaluation Procedures (HEP) is an established approach to assessment of natural resources. The HEP approach has been well documented and is approved for use in Corps projects as an assessment framework that combines resource quality and quantity over time, and is appropriate throughout the United States. The Habitat Suitability Index (HSI) models are the format for quantity determinations that are applied within the HEP framework. The following guidelines are provided to help determine the need for certification. ITR of input data is required in all instances.

- New HSI models developed by the Corps are subject to certification.
- Published HSI models, while peer-reviewed and possibly tested by the developers, are subject to review and approval by the PCX.
- Modifications to published HSI models, where relationships or formulas are changed, are subject to certification.

e. Cost effectiveness and incremental cost analyses will be based upon the IWR PLAN program and other standard methods of analysis.

f. We do not anticipate using any planning models that are not currently certified. If new HSI models are developed for use in the Minnehaha Creek Feasibility Study, we will coordinate accordingly with the Ecosystem Restoration Planning Center of Expertise.

5. Review and Quality Control.

a. Independent Technical Review (ITR) is the primary method of quality control. ITR is a critical examination by a qualified person or team that was not involved in the day-to-day technical work that supports the decision document. ITR is intended to confirm that such work was accomplished in accordance with clearly established professional principles, practices, codes, and criteria, and that recommendations are in compliance with laws and policy.

b. ITR will be ongoing throughout product development, rather than a cumulative review performed at the end of the investigation. The ITR will be performed by a Corps of Engineers sister district, possibly Rock Island District, in coordination with the Ecosystem Restoration Planning Center of Expertise and the Walla Walla District Cost Estimating Directory of Expertise. The expertise and technical backgrounds of the ITR team members will qualify them to provide a comprehensive technical review of the product. The ITR team members have not yet been identified but will consist of the following disciplines. In coordination with the PCX names of ITR members, and an ITR team lead will be determined in the future, being that the ITR is currently scheduled for December of 2008 it is not pertinent to select a team at this time. Disciplines, office symbols, and org codes from Rock Island are identified in the following table as potential ITR members:

Discipline	Office Symbol	Org Code
Recreation planning	CEMVR-PM-A	B5H4500
Real Estate	CEMVR-RE-P	B5N0200
Cultural resources	CEMVR-PM-A	B5H4500
Economics	CEMVR-PM-A	B5L1450
Environmental engineering/NEPA	CEMVR-PM-A	B5H4500
Cost/value engineering	CEMVR-EC-DE	B5L1440
Plan formulation/team lead	CEMVR-PM-F	B5H4600
Environmental/NEPA	CEMVR-PM-A	B5H4500
Hydrology and hydraulics/water control	CEMVR-EC-HH	B5L1210
Structural engineer	CEMVR-EC-DS	B5L1430
Geotechnical	CEMVR-EC-G	B5L1300

c. ITR comments and responses will be recorded in the online DRChecks system (www.projnet.org). Documentation of the independent technical review will be included with the submission of the reports to Mississippi Valley Division and HQUSACE. All comments resulting from the independent technical review will be resolved prior to forwarding the feasibility study to higher authority and local interests. The report will be accompanied by a certification, indicating that the independent technical review process has been completed and that all technical issues have been resolved.

d. Value Engineering Plan. Value Engineering (VE) evaluations provide another method for ensuring quality. The goal of VE on this project is to ensure that a full array of alternatives is considered in order to maximize cost effectiveness. A VE study will be conducted during the plan formulation before the final array of alternatives has been defined. The VE study objectives will be to build upon the design team's preliminary plan formulation efforts, clarify the functional requirements of project features, and recommend additional conceptual alternatives to meet those requirements. The same team that performs ITR will conduct the VE study with additional technical representatives from the Sponsor. Sponsor participation will be an item of in-kind services.

e. Quality control will also be monitored via internal/District functional element reviews, Local Sponsor reviews, and Higher Authority/vertical team conferences and reviews. The vertical team has been involved in the plan formulation process and was supportive of the In-Progress Review (IPR) meeting, they concur with the recommendation of using an ITR for the review process. The vertical team will continue to be involved in the process at regular intervals and when standard reviews are necessary.

f. The Sponsor will be responsible for quality control over deliverables provided as in-kind contributions. The Corps will verify that such contributions meet negotiated requirements and standards before granting cost-sharing credit for those contributions.

g. External Peer Review. This feasibility study will not be subject to External Peer Review. The study is not anticipated to generate influential scientific information that would be either controversial or of sufficient risk and magnitude as to require External Peer Review as described in Engineering Circular 1105-2-408. The project is not anticipated to generate controversy the public and many state and federal agencies are participating in the project and

there has been a great deal of input to date. There will be no significant negative impacts to the area or the environment. The main impacts will be beneficial and the outputs of the project will be within current policy and will not impact future policies. Implementation costs are expected to be in the $25 million to $30 million range over an area of 181 square miles with limited project risks.

h. Public Review. The MCWD conducted extensive public involvement activities between 2003 and 2005 as part of their "Visioning Process" and during the development of their Comprehensive Watershed Management Plan, both referenced in the Project Management Plan. This study will incorporate that public input and provide additional opportunities for public involvement. The draft feasibility report and environmental assessment will be distributed for public review as part of the normal NEPA review process. The formal public review will be scheduled after the Alternative Formulation Briefing and before submitting the report to the Civil Works Review Board in accordance with the study schedule defined in the Project Management Plan.

6. Schedule. The schedule for study tasks related to review and public input are shown in the following table, the schedule is subject to the availability of funds and further development of the study:

ID	Task Name	Duration	Start Date	Finish Date
1	**Start Project (Sign FCSA)**	**0 days**	**January-03**	**January-03**
11	IPR	4 weeks	July-04	July-04
12	**Feasibility Scoping Meeting**	4 wks	**June-08**	**June-08**
20	ITR Review	4 wks	December-08	December-08
22	**Alt. Formulation Briefing**	4 wks	**April-09**	**April-09**
25	HQ/MVD/public review	6 wks	May-09	June-09
26	Public meeting (local)	1 day	May-09	May-09
28	**Division Engineer transmit to HQ**	**0 days**	**August-09**	**August-09**
29	HQUSACE policy review	4 wks	August-09	August-09
30	CWRB briefing	1 day	October-09	October-09
31	Write Draft Chief's report	1 wk	October-09	October-09
32	Agency and Public Review	6 wks	October-09	November-09

DEPARTMENT OF THE ARMY
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REPLY TO
ATTENTION OF:

CEMVD-PD-SP

11 OCT 2007

MEMORANDUM FOR Commander, St. Paul District

SUBJECT: Minnehaha Creek Watershed Restoration Feasibility Study Peer Review Plan (PRP)

1. References:

a. Memorandum, CEMVD-PD-N, 5 October 2007, subject: Minnehaha Creek Watershed Restoration, Ecosystem Planning Center of Expertise Recommendation for Approval of Peer Review Plan (encl).

b. EC 1105-2-408, Peer Review of Decision documents, 31 May 2005.

c. Memorandum, CECW-CP, 30 March 2007, subject: Peer Review Process.

d. Memorandum, March 2007, subject: Supplemental information for the "Peer Review Process."

2. I hereby approve subject Peer Review Plan and concur with the conclusion that external peer review of this project is not necessary for the following reasons: (1) no influential scientific information will be produced by the study, and (2) the risk was assessed as low. The proposed PRP has been coordinated with the National Ecosystem Planning Center of Expertise (ECO-PCX) and concurred in by the ECO-PCX. The PRP complies with all applicable policy and provides an adequate independent technical review of the plan formulation, engineering and environmental analyses, and other aspects of the plan development. Non-substantive changes to this PRP do not require further approval.

3. The District should post the PRP to its web site and provide a link to the ECO-PCX for posting on their web page, as well as providing a copy of the final approved PRP to the ECO-PCX for their use. Before posting to the web site, the names of Corps/Army employees should be removed in accordance with reference 1.d. above.

4. The MVD point of contact is Mr. Robert Petersen, CEMVD-PD-SP, (601) 634-5286.

Encl

ROBERT CREAR
Brigadier General, USA
Commanding